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# **USSR Report**

**MILITARY AFFAIRS**

**No. 1509**

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## POLITICAL TRAINING: AT THE COMPANY LEVEL

Moscow KRASNAYA ZVEZDA in Russian 17 Jan 80 p 2

[Article by Lt Gen V. Samoylenko, member of the military council and chief of the political directorate of the Red Banner Urals military district: "Company Communists"]

[Excerpt] Company communists. It is truly difficult to overestimate their role in the life of the military collectives. They have considerable opportunities for influencing the fighters, and through them, the state of affairs in a (podrazdeleniye) subunit. We would add: specific and daily influence. For they are always together with the people - in the field and in the classroom, standing watch and on regular duty, they have the opportunity to observe the action of every person under the most diverse conditions, make a reliable judgement of the motives for his actions and study the specific features of his character. All of this makes it possible for them to have a deep individual impact on service men and substantially assist the commander in training and educating personnel.

The truth of these words is confirmed by life itself. Suffice it to say that in the past training year, in the companies and batteries of our district, the results of combat and political training were much better in those having party organizations or party groups than in the same sub-units which do not have party organizations.

In our district, party organization and party groups have been created in more than 90 percent of the companies and subunits equivalent to them. The past reports and selections have once again confirmed that as a rule, these are combat ready collectives of communists which have a marked influence on all aspects of military life.

Every day work more efficiently and with higher quality - this is the military slogan put forward by the 25th Party Congress, and which rings out with new force at the November (1979) Plenum of the CPSU CC. Each party member should think about the military activity of his own organization and about his personal active participant in its work. This is

all the more true since besides the "on the whole" happy indicators, we also have indicators of a different kind. For example, the tank company which is commanded by Senior Lieutenant M. Khevzun, has already several times now taken on the obligation of becoming a company rated as excellent. The obligation has been assumed but not carried out, close but nonetheless "not paled off". Why? It can be said quite definitely that the commander underestimates the significance of educational work, moral incentives, while the party nucleus of the company is likewise doing inadequate work for its part in this regard.

There are also those subunits which over several years have satisfied themselves with a mediocre position, but really lag behind everyone.

This is why the political directorate of the district assigns special significance to the fact that the feeling of responsibility of the members and candidates of the party is to be raised, and their creative forces activated. And it is nonetheless important to painstakingly teach the communists of this unit the methods and forms of party influence on the fighters. It is no secret that some of them (and they are young people, primarily with a short party service record) frequently equate administrative activity with party activity, and reduce the latter to solely participating in the party meetings.

We are making an effort to objectively train the local active membership in the units in the practice of party work and the organization of intra-party life. The secretaries of the company party organizations are participating in topical seminars, in which the procedure for party work in various areas is being studied. For example, how to assure that a subunit will be an authentic center for the education of soldiers and noncoms. Or, let us say, it is being considered in detail how the members and candidates of the party can assist the commander in rallying the military collective. The same specific approach is being taken when hearing out the party communists at the meetings of the party committee, party office and in generalizing the experience of the better company party organizations and party groups. In a word, the attention paid to them by the political organs and political workers of the units and sub-units, as well as the primary party organizations has increased markedly.

It stands to reason that the battalion party office occupies a special place in the training and education of party communists. It has the capability of objectively supervising the activity of company party organizations.

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## MILITARY HISTORY INSTITUTE: ACTIVITIES DESCRIBED

Moscow KRASNAYA ZVEZDA in Russian 17 Jan 80 p 2

[Article by Cap 1st rank A. Pozdnyakov: "The house on Universitetskiy Prospect; reporting from the Institute of Military History of the USSR Ministry of Defense"]

[Text] Moscow, Universitetskiy Prospect, No. 14. Here, the Institute of Military History of the USSR Ministry of Defense is housed in a modern glass and concrete building. Created by a resolution of the CPSU CC in 1966, it has made a substantial contribution to historical science, especially in developing questions of Marxist Leninist methodology in military history, in researching the Great Patriotic War of the Soviet Union from 1941-1945, and the Second World War as a whole.

The institute is widely known in our nation and abroad through its own fundamental works. And what is the collective of the institute busy with now, in the course of preparing for the 35th anniversary of victory in the Great Patriotic War, and with what will the military historians arrive on this renowned date?

There is a bust of V.I. Lenin among the greenery of living plants in the spacious vestibule, and the words of Il'ich are on the wall: "A modern army cannot be built without science." It is as if they underscore the fact that the work of the scientists of the institute, who have devoted their life to studying such a complex phenomenon as war, is inseparably tied to the business of reliably defending the socialist state, and serves for the development of the theory and practice of constructing the Soviet armed forces.

"In the activity of our collective," says the chief of the institute and corresponding member of the USSR Academy of Sciences, Lieutenant General

P. Zhilin, "Studies of the military science and military history heritage of the classical scholars of Marxism Leninism, the generalization of the historical experience of the Soviet people in protecting the socialist fatherland and the preparation of works on military science and studying the military history of foreign countries occupy one of the foremost positions."

For the 35th anniversary of the great victory, the collective of the institute is preparing a series of scientific works. The following monographs are in production in the publishing houses: "V.I. Lenin and Military Science", "CPSU Leadership of the Armed Forces is the Fundamental Basis for Building the Soviet Military", "The Armed Forces of the USSR and Military Engineering Progress", "A History of Soviet Military Strategy", as well as the following historical and theoretical studies: "Political Organs of the USSR Armed Forces" and "Party Organizations in the Soviet Army and Navy". The development of a manuscript on frontal offensive operations has been completed, and works are being prepared on the strategic reserves in the Great Patriotic War, assault crossings of water obstacles (based on the experience of the 65th army), the books "The Karelian Front in the Great Patriotic War", "The Engineering Troops of the Soviet Army, 1918-1945", "Ideological Work in the USSR Armed Forces" and a number of others.

Preparation for scientific conferences is underway which are devoted to the military theory activity of V.I. Lenin and the 35th anniversary of the victory.

"Our institute is coordinating military history research on a nationwide scale," continues Lieutenant General P. Zhilin, "We view its mission as one of eliminating parallelism and duplication in the study of military history problems, and concentrating the attention of researchers on the development of that which is of real importance. For this purpose, we maintain ties with 300 scientific institutions and organizations. The scientific council on coordination, at one of its sessions in 1979, treated the recommended subject material for research, doctoral and candidate dissertations for the years 1980-1990. There are more than 160 topics in it."

The participation of the institute in the practical military education of workers is expanding. Scientific associates have consulted on the 20-series documentary film "The Great Patriotic" and are assisting in the preparation of the television programs "I Serve the Soviet Union!" and "A Heroic Deed". About 250 lectures were given in units and formations, in enterprises and in institutions in 1979. A series of popular science brochures on the leadership role of the CPSU in achieving the great victory, the most important events of the Great Patriotic War, the art of the Soviet military and the liberating mission of the USSR armed forces in the Second World War has been published.

One of the important trends in the activity of the institute is fighting against bourgeois falsifiers, who are trying to deny the decisive role of the Soviet people and its armed forces in achieving the victory over fascism in the Second World War. Besides the special works on this problem area, the scientists of the institute are presenting lectures and reports at international congresses and symposia, in which they expose all kinds of versions which distort the prewar foreign policy of the Soviet Union, and the course and outcome of the Second World War.

The institute has established and is reinforcing scientific ties with military history institutions in cooperating socialist nations and with international military history organizations. In the past year, 70 historians from 12 nations visited the institute. More than 20 scientific associates of the institutes traveled abroad to participate in international conferences.

The works of the institute, published both in our country and abroad are in glass cases in the office of Lieutenant General P. Zhilin. Among them are several works on the activity of V.I. Lenin in the field of military theory and history, a number of works on the history of the Great Patriotic War, the book "War, History, Ideology", 10 volumes of "The History of the Second World War, 1939-1945" and the 7 volumes of the "Soviet Military Encyclopedia".

We talked about these and other scientific works. Our conversation was interrupted several times by the telephone ringing. It was like an illustration of the account of the chief of the institutes on the affairs and the concerns of the collective and its many sided connections. For example, they reported from the "Nauka" publishing house that the manuscript "A Brief History of the Second World War 1939-1945" which had arrived there will be printed in the requisite amount for the upcoming discussion of it in Budapest. This one volume popular science work is being written by the Institute of Military History and the Institute of General History of the USSR Academy of Sciences in conjunction with scholars from socialist countries. It is planned for high volume publication in the USSR, Poland, Czechoslovakia, the GDR, Hungary, Bulgaria, Mongolia, Rumania and in Cuba.

We had hardly finished the conversation on the new work, when the telephone rang from Bucharest. This time, the conversation was about the scientific reports at the 15th International Congress of Historical Sciences, which will take place this summer in the capitol of the Rumanian Socialist Republic.

Then a folder was brought in with the letters which had arrived that day. The mail was diverse. There were several letters from participants in the Great Patriotic War : memoirs, recollections of events, requests and queries. Colonel Ninko Kosashki, chief of the Bulgarian Military History

Institute, writes from Sofia. He is asking for an opinion of the author's abstract of the candidate dissertation of Major Ignat Krivorov on the subject "The Cooperation Between the Bulgarian People's Army and the Soviet Army in the Fatherland War in Bulgaria in 1944-1945".

And the usual everyday work goes on in the apartments and editorial offices offices of the institute, including that on the 11th volume of the "History of the Second World War, 1939-1945", a work being written by the institute in conjunction with the Institute of Marxism Leninism of the CPSU CC, and the Institutes of History of the USSR and General History of the USSR Academy of Sciences.

The editor-in-chief of the work on the history of the Second World War, candidate of the historical sciences, Major General N. Glazunov relates: "The efforts of many scientific associates are now concentrated on the completion of this fundamental work. As you see, the second proof of the 11th volume is being revised in accordance with the commentaries of the main editorial commission, which includes great scholars and military figures. The manuscript of the 12th volume, its first variant is on the table to the right. . .

The "History of the Second World War, 1939-1945", 330,000 copies of which are being published in our country, is being translated and published in Bulgaria, Hungary, the GDR, Poland and Czechoslovakia. Considerable interest in this scientific work is being manifest in the U.S., France, England and in other nations.

Work on the "Soviet Military Encyclopedia" being published by the institute is likewise being completed. I found its editor-in-chief, doctor of military sciences, professor and Lieutenant General M. Kir'yan at work on its last and eighth volume. Some 505 pages of the future book, it can be said, have already been edited, but still ahead are many large and pressing concerns related to its publication. There are about 11,000 concepts and terms in the encyclopedia. This is a systematized summary of knowledge of military history and the state of the art in military affairs.

The department of domestic military history. There are two works in front of doctor of the historical sciences, Colonel Yu. Perechnev, chief of the department. "On the Volkhov Front", which the department has prepared for publication. And the manuscript of the book by retired Colonel A. Dorokhov, "The Winged Defenders of Sevastopol". It arrived at the institute from the "Tavriya" publishing house for review.

"Reviewing is one of the most labor intensive areas of our work," says Yu. Perechnev. "Some 1,100 author's sheets [units of 40,000 ens], this is how many manuscripts, books and doctoral and candidate dissertations were reviewed by the institute in 1979 alone."

In the hands of the chief of the department of foreign military history, candidate of the historical sciences, Colonel A. Antosyak is a manuscript of the book "Courage and Brotherhood" - a joint work of Soviet and Cuban historians, which recounts the friendship between the peoples and fighters of the Soviet Union and Cuba.

"Right now," relates A. Antosyak, "There is another book of the same kind in production at Voenizdat Publishers under the name 'Age-Old Friendship, Fighting Brotherhood'. We have prepared it in conjunction with Bulgarian Military Historians."

In another room, I saw the proofs of a book with the title "From Stalingrad to Berlin". This book, written by two-time Hero of the Soviet Union and Marshall of the Soviet Union, V.I. Chuikov, will soon be published, and it is as yet being read and touched up in the institute.

At work here is a highly skilled collective of researchers who love their work. Among them are more than 100 participants of the Great Patriotic War, and about 70 percent of the staff members have college degrees. They are making a worthy contribution to the education of workers, servicemen of the army and navy in the spirit of trueness to Leninist ideals, the revolutionary, fighting and labor traditions of the party and the people, as well as in the spirit of constant readiness for a heroic defense of the motherland.

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## POLITICAL OFFICERS: RELATIONSHIP WITH COMMANDERS DISCUSSED

MOSCOW KRASNAYA ZVEDA in Russian 18 Jan 80 p 2

[Article by Lt Col N. Berezhnoy: "Party Life: the Communist in the Collective: Contact"]

[Text] The train had already started to move. Colonel Ye. Galasyuk glanced out the window. The last thing he saw was a part of the area near the station and two officers: the commanding officer and his deputy for political affairs.

Yevsey Nikitovich waved a hand at them. They did not reply, occupied at that moment with some friendly conversation of their own. The commander opened the car door, inviting his deputy along. This small detail occasioned joy in the heart of the Colonel.

"The ice, it seems, has started to melt," he thought with satisfaction. And this meant that his stay in the unit did not pass without a trace, something which could also be reported to the political directorate.

The train picked up speed. Yevsey Nikitovich looked out the window and thought about these people with whom he had served, and believed that now everything would go well for them. And he remembered his own story, when for him, at the time when he was chief of the political section of the regiment, relationships with the new commander were also difficult and complicated. . .

. . . Lieutenant Colonel N. Ivanitskiy (he is now serving at a new station) right from the first did not appeal to him with his coldness and his somehow emphasized officiousness. During those few days when Ivanitskiy was taking over the regiment, he also did not take time, and perhaps, didn't consider it necessary, to meet with the chief of the political section. This offended Yevsey Nikitovich. He attempted to find some kind of justification for this behavior of the commander, and comforted himself with the fact that the commander didn't have time right now for long conversations and needed to quickly get into the affairs of the regiment. And right then he caught himself engaging in

self-deception, in that his conclusions were not very convincing. Yevsey Nikitovich had served for several years in the regiment, knew the people well, and of course, his assistance would stand the commander in good stead. But the commander literally did not take note of him.

For several days Lieutenant Colonel Ivanitskiy worked in the subunits. Yevsey Nikitovich jealously waited for the result. He most of all wanted to find out how the new commander assessed the state of affairs at the "points". But it was not in the rules for the chief of the political section to ask this of subordinates, and he did not want to call Ivanitskiy. The sense of insult stirred him up so that he went out and didn't even say anything about this.

"Well then, let it be that way," decided Yevsey Nikitovich. "I have my own area of work, and there are my own ways of influencing the execution of the missions. . ."

On the day the commander returned, Yevsey Nikitovich was as at a party meeting, and when he appeared at headquarters, he found out that Lieutenant Colonel Ivanitskiy had arrived in a bad mood and had already signed a punishment order for one of the division commanders, an officer of principle and a hard-working one.

"Well there is the first sign," summed up Yevsey Nikitovich. "Things are getting tough. Should I seek advice from the chief of the political section of the soyedineniye [unit]? And what should I say? And is this really the best way of eliminating conflict? I must do something on my own. Only don't get hot headed. What am I really unsatisfied with?" he reasoned later. "The commander has not shared his immediate plans with me, and did not offer to travel together to the divisions. And why should he do this? And if I honestly admit what I was thinking about myself when I met him? Well, they say, he arrived ready for anything, critical of what he had to do, and we had invested so much work to get the regiment excellent ratings. . . if this did not escape his attention, then this could also irritate him."

Just this simple idea then forced Yevsey Nikitovich to go to the regiment commander. Lieutenant Colonel Ivanitskiy certainly anticipated his arrival, because he met him guardedly. But Yevsey Nikitovich gave no sign that he knew about the given order.

"Nikolay Afanas'yevich, I was at a party meeting at the division today," he began directly from the threshold. "The communists put forward sensible suggestions as regards the execution of the comprehensive training exercises for the combat teams. I came to report to you."

"You are always welcome," replied the regiment commander, his face brightening somewhat and standing up to meet him.

This, in essence their first conversation, continued for a long time. Yevsey Nikitovich discussed the party meeting in detail, and asked the commander to share his impressions about the trip among the subunits, and then gave his own opinion of the officers of the regiment. He devoted a tiny bit more attention to the individual qualities of the division commander, who received the punishment. The sincerity of the tone of the political worker, and the sincere desire to help the commander of the regiment understand people did not go unanswered. Lieutenant Colonel Ivanitskiy frankly admitted that as regards Major Kozlov, he had jumped to conclusions. He called the chief of staff and ordered the annulment of the order. By the way, it subsequently became the rule for the regiment commander to obligatorily consult with the chief of the political section in such situations.

So on Sunday a competition for the best team was planned in the regiment. The commander supported the initiative. Preparations were made for this event with enthusiasm. Everything went well, but on the eve of the competitions, Yevsey Nikitovich accidentally found out that on Sunday, the commander was planning to go somewhere on personal business. The notion then flashed through his mind: let him go. But then thinking it over, he acted differently. He went to the commander at home, and convinced him of the need to be present, if only for the opening. For the participation of the commander in such activities not only imparts importance to them, but is perceived by the personnel as something considerably more than a sign of respect in them and interest in their affairs, and increases the authority of the commander. In a word, Ivanitskiy then spent the entire day at the stadium, and afterward more than once mentioned this Sunday and thanked the chief of the political section for the fact that he insisted and "dragged" him out 'into the fresh air.

Their relationship was always mutually useful. After about a half a year, Yevsey Nikitovich noticed that Lieutenant Colonel Ivanitskiy was almost never in the first division. This subunit was always numbered among the average in the regiment, and as the previous commander thought, its leaders weren't up to anymore. He did not approve of the position of Lieutenant Colonel Ivanitskiy, who could not but see the deficiencies existing there, but he refrained from expressing his opinion. True, as before, he himself frequently visited there. Soon, however, the opportunity to speak about this with the regiment commander presented itself.

"What are you busy with, Yevsey Nikitovich, if it is no secret?", asked Ivanitskiy once, looking in on him in his office.

"I am putting some plans together," replied Galasyuk. "We want to work with a group of officers in the first division."

"Really, and if I'm against it?" responded the regiment commander. "I don't think it is as yet necessary to go there even more, for a group."

"I do not understand. Do you really not see that things are going poorly in the division?"

"Accordingly, you plan as before to watch over the commander?" Ivanitskiy said with a clear allusion to the frequent trips of the chief of the political section to the division. "This is not the work procedure here."

"And what do you propose? Sitting with your hands folded and waiting for trouble?"

"No. It seems to me you are making a mistake in the evaluation of the leaders of the division. With respect to the level of theoretical and methodological training, we have the strongest commander in this subunit. But he, just as his deputy for political affairs, waits for instructions for any reason and is afraid to be independent. You have accustomed them to this."

"This is something new," smiled Yevsey Nikitovich.

"Don't take offense," said Lieutenant Colonel Ivanitskiy in a conciliatory manner. "Of course you can go. But look at them from this viewpoint and you will be convinced that I am right. The demands on them need to be increased and you should watch over them less."

That evening they parted, each with his own opinion. But the following morning, Yevsey Nikitovich told the commander that he would not be traveling to the division. Subsequent events confirmed the correctness of this decision. By the end of the year, things improved in the sub-unit, and the regiment made yet another step forward in combat improvement . . .

Colonel Galasyuk recalled much more. He thought about how important mutual understanding is in relationships between communists-leaders. And once again he thought about his own command in the unit. He now believed that for the commander and the deputy for political affairs, everything would go well. And they will travel the stern roads of service for more than just one year, supporting each other.

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## MILITARY JOURNALS: CONTENTS EVALUATED

Moscow KRASNAYA ZVEDA in Russian 18 Jan 80 p 2

[Article: "Review of Military Journals. In the Interests of Combat Readiness"]

[Text] In our age, the age of scientific and engineering progress, it is difficult to overestimate the importance of technical knowledge. It is especially necessary for army and navy personnel. ". . . a person who has completely mastered the equipment," remarked comrade L.I. Brezhnev, "Remains the major, decisive force in war." The press, including military journals, occupy a conspicuous place in the mobilization of servicemen for the mastery of military equipment and weaponry. The press is actively engaged in propagandizing the positive experience in training and educating personnel, experience in the study and mastery of combat equipment and weapons by the servicemen. Materials are regularly printed in the journals VOYENNYY VESTNIK and ZNAMENOSETS which revealed the experience of combat skill experts, the achievements of inventors and efficiency experts, and which tell about the refinement and utilization of the training materials base.

For example, a selection devoted to the training of military drivers attracts attention in the 10th issue of VOYENNYY VESTNIK. Articles by doctor of the military sciences, professor and Colonel N. Malyugin and candidate of the military sciences, lecturer Major General of the Artillery (reserves), N. Korf are published in it, in which useful advice is contained as regards preparing skilled specialists, the drivers of combat vehicles, in short periods of time.

The reader will also find a great deal interesting and instructional for himself in the article of the commander of a leading battalion, Major P. Chuyko, "For the Excellent Driving of Military Vehicles" (No 7). In it, he tells of the training of tank drivers for operations under unfavorable conditions at night.

The journal devotes much other material - critiques of exercises, correspondence and articles on the better specialists, etc. - to popularizing advanced methods of training troops in the skillful mastery of weaponry and equipment.

The journal ZNAMENOSETS devotes a great deal of attention to personnel training procedures. Over the course of a number of months, a detailed conversation has taken place in its pages on the topic: "Procedure is the Art of Training". Many readers have participated in it.

A continuation of the conversation started previously was the publication of materials on the making of young specialists, under a new rubric: "We Train the Young Replacement". In them, the experience of the better instructors, leaders of exercises, combat skill experts and first class specialists is shared.

It is generally recognized that a remarkable accelerating agent in the technical training of troops is socialist competition, to which the journals VOYENNYY VESTNIK and ZNAMENOSETS likewise give considerable space. It is shown in the published materials how competition assists the troops in mastering combat equipment and weaponry, operate them competently, maintain them in perfect shape, increase their proficiency rating and acquire related specialties.

The journal ZNAMENOSETS regularly talks about the guns of the Great Patriotic War, and provides photographs and descriptions of celebrated combat equipment. A photo quiz on the best knowledge of domestic guns and combat equipment has run successfully on its pages. All of this undoubtedly makes the troops proud of our equipment and guns, and calls for even better knowledge of them so as to successfully use them in battle.

Both journals are conducting a constant search for improving technical propaganda. And they have made definite achievements in this area. But far from everything has been done. Many possibilities and reserves have as yet not been utilized. For example, take such a question as the creation of high technical standards among the troops. It is well known that today it is important to have deep knowledge of radio electronics, computer engineering, physics and other engineering disciplines. The journals would be able to provide no small amount of assistance to the troops in supplementing this knowledge, by publishing popular science and specialized articles of famous scientists on the achievements of science and engineering. However, they do this rarely.

Modern equipment, materiel and weapons, in order to be in constant readiness, need regular checking, precise alignment and adjustment. Here the strictest operational and maintenance discipline is especially needed. Instilling this quality in the troops is a most important problem. The journals could do a great deal more to solve it than they have done.

Questions of strengthening discipline, as required by the resolutions of the November (1979) Plenum of the CPSU CC, should appear on the pages of the journals with particular sharpness and be constantly in their field of view.

The journals devote little attention to instilling in servicemen feelings of responsibility for the skillful mastery of weapons and equipment, maintain them in constant combat readiness, as well as the moral and psychological tempering of the personnel. In a number of materials, the notion that contemporary weapons are collective weapons is correctly underscored. But in essence, it is not further developed. The problems of psychological compatibility of people, ways of strengthening collectives, creating a business-like mood in them as well as a healthy moral atmosphere such as is needed in modern battle, are not reflected to the requisite extent.

Materials are rarely printed on the work of military engineering circles, schools of advanced experience, universities of technical knowledge and lecture halls. And really, the propagandizing of their experience is likewise called upon to promote the broadening of military engineering knowledge of the troops.

At times, the journals are deficient in courage and decisiveness in combating negative phenomena, which are encountered every once in a while in the course of study, military applications, the operation and maintenance of equipment and weaponry. It is necessary to take a more uncompromising approach to the facts of unskilled operation of equipment and come out more actively against obsolete methods of mastering it.

Far from all of the materials of the journals are of high literary quality. Several of them suffer from cheerless descriptiveness and technological dryness, as well as a lack of deep analysis and are reminiscent of instructions and manuals. There are articles which are, in principle, written about everything a little at a time.

Great and responsible tasks confront the personnel of the army and navy in the new training year. Assisting the troops in dealing with them successively is a matter of honor for the military press. For this, it is necessary to make better propaganda of advanced experience, including experience related to the mastery of combat equipment and weapons, and making more insistence and goal directed use of the entire arsenal of journalistic means and forms for this, as well as the creative capabilities of the editorial staffs.

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CSO:1801

## MOTOR VEHICLE SCHOOL: COURSE IMPROVEMENTS DESCRIBED

Moscow KRASNAYA ZVEZDA in Russian 19 Jan 80 p 2

[Article by Lt Gen Eng, V. Pavlov, superintendent of the Ryazan' Higher Military Motor Vehicle Engineering Academy: "Closely Tied to Practice; Educational Experience"]

[Text] Every year a new detachment of motor vehicle officers is sent to the troops from the walls of our academy. After a little while we begin to receive opinions on how yesterday's students are doing in service: they train and educate subordinates, as well as provide for the operation, repair, maintenance and combat service of motor vehicle equipment.

In these opinions is not only evidence of how the graduates are serving, but also an assessment of the work of all of those who trained and educated them. Being an objective and the most widespread form of "feedback" to the academy from the ranks, they provide rich food for thought, and allow for the timely introduction of requisite corrections in the training and educational process.

The overwhelming majority of opinions on the graduates which we have received over the last years are happy ones. It was decided, shall we say, to find out how the communists and Senior Lieutenants V. Cherkasov and D. Komolov, Lieutenant Yu. Kochurov, I. Chestnykh and many others were doing in service. The commanders spoke of each one warmly and sincerely, and rated their self-sacrificing military labor highly. For example, Lieutenant Yu. Kochurov, served for two years as the chief of motor vehicle services of a division and was advanced to the duty of company commander for repair of motor vehicle and tractor equipment.

Unfortunately, although rarely, letters do come in containing negative comments on individual graduates. The officers S. Kobozev, A. Drachev, V. Kalinin and A. Sharapov have not shown their best side with the troops. Poor professional training was noted for some, and for others, a low level of personal discipline, and a lack of knowhow in organizing socialist competition in the subunits. Each fact like this is an alarm signal, which is evidence of failure in our work.

All of the comments, both positive and negative, are carefully analyzed by the academy command, and the officers of the political and teaching section. Then they are transmitted for study to the departments and faculties. Some questions related to the making of young specialists are discussed at party, komsomol and general meetings of the personnel, and sessions of the academy council. For example, the academy council in considering the problem of improving the ideological tempering of students in light of the requirements of the decree by the CPSU CC: "On Further Improving Ideological, Political and Educational Work", considerable attention was devoted to analyzing the comments.

As a rule, the study of them was broken down according to sections. Comments were considered with respect to the Marxist Leninist training of the graduates, their ideological tempering and participation in political and educational work. The quality of the special military training of young officers, and their having organizational and procedural skills is analyzed. This makes it possible to reveal weak links in the activity of one department or another, make corrections in the planning of the educational and training process and improve its efficiency.

I shall cite an example. Noted in the characteristics of the troops of Lieutenant A. Ivashov and a few other 1977 graduates was an absence on their part of solid practical skill in working with equipment. All of the comments with the corresponding recommendations were transmitted to the department for motor vehicle and tracked vehicle operation, which is headed up by Colonel Yu. Vokrachko.

After a detailed study of them, the instructors planned specific measures to eliminate the indicated deficiencies. At one of the department meetings, a working group was created in which colonels G. Obenko, S. Makhnev, Ye. Zherdev, Lieutenant Colonel Engineer S. Shirokov and others were included. It was given the mission of generalizing the work experience of young officers with the troops on motor vehicle equipment and determining the optimum volume of knowledge in practical skills needed to be taught, taking into account their preparation as engineers and mechanics. This work was carried out during the troop training period of the students.

On the basis of the data obtained, new plan charts were compiled and structural logic flow charts for the study of certain disciplines were developed by instructors Colonel Engineer V. Miridonov and Lieutenant Colonel A. Seredoy. Colonel Engineers M. Kolchayev and S. Shirokov prepared a series of procedural educational aids on the performance of adjustment work, the utilization of fuel and lubricants, the elimination of typical defects in motor vehicles and the completion of technical documentation.

Requirements placed on the quality of the laboratory work performed by the students were likewise increased, and individual accounting of the

independent execution of practical tasks by them in the technical servicing and adjustments of plants and instruments was instituted. All of this yielded positive results. In the comments, such deficiencies as poor practical skills of the graduates in the organization of servicing and operating motor vehicle equipment, the utilization of fuel and lubricants and a lack of knowledge in preparing planning and accounting-reporting documentation came to be cited significantly less frequently.

I have already said above that we were seriously disturbed by the lack in some of our pupils of solid practical skills in organizing socialist competition in platoons and companies, and in supervising the competition. In particular, such a reproach was directed towards S. Kobzev and other graduates. These kinds of shortcoming were also noted in the characteristics ascribed to a number of students with a period of training in line units.

When we studied this question in detail, it turned out that the majority of students did a good job with this publicity, comparability of the competition results and the possibility of repeating the advanced experience. But they did not have a sufficiently clear cut idea of how to apply these principles in practice and utilize them on a daily basis.

The commanders, political workers and instructors of the academy began to devote greater attention to the practical side of the problem. We will note that Lieutenant Colonel V. Zelenskiy and V. Shepelev strengthened supervision over the course of the competition between students, and began to strive to see that each student constantly measured what was achieved against the obligations and felt personally responsible for his successes and the successes of the platoon or company.

At the same time, we were concerned how each student also performed in the role of an organizer, supervisor of socialist competition in the exercises, carrying out the duties of subunit commanders. The future officers were trained to make practical provisions in the exercises for competitiveness, wide publicity, comparability of the results and popularization of the advanced experience of the best. Each of them was given the opportunity to sum up the totals for a particular exercise.

The comments from the troops caused us to pay more constant attention to how we are training future officers in working individually with servicemen, and the use of disciplinary rights. This question was discussed at party and komsomol meetings and at departmental sessions. The communists proposed, along with increasing the quality of planned exercises, the use of different methods for work outside the class. At the initiative of the party organization, the departments of Marxism Leninism held a practical scientific conference with the students on "Your Subordinate, His Character, Inclinations and Shortcomings"; and a topical evening meeting on "The Right to Reward and Penalize". The series of instructional

readings based on the works of V.I. Lenin, N.K. Krupskaya, M.I. Kalinin and A.S. Makarenko were of considerable use to the students. Experience in working individually with people and knowing how to select "keys" to the heart of a soldier were communicated in conversations with students by teachers, political workers and graduates of the academy. Senior students who had been through the training period shared their impressions of the first steps in the role of an educator of soldiers.

Much of what we did was prompted by comments concerning the service of our graduates among the troops. This feedback is quite useful, and we will improve the forms of it. For these purposes, we are also studying the experience of other military academies.

In conclusion, I would like to turn to unit commanders and political workers with a request: take a more responsible approach to comments, which are an important reference point in our work. They make it possible to more completely feel the pulse of the life of the troops, and this means prepare motor vehicle officer personnel more efficiently and with better quality.

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CSO:1801

## CRITICISM: OFFICER HOUSING DEFICIENCIES

Moscow KRASNAYA ZVEZDA in Russian 19 Jan 80 p 2

[Article by Lt Col Ret I. Moshkovskiy: "The Official Document Has Been Signed, the Building Stands Empty. Following Up a Letter"],

[Text] If you believe the business papers, then this five-story building has been officially accepted for a long time. Eye witnesses say that as early as September, the doors of all of its entrances were thrown open wide for the commission members. The commission walked around through the apartments, looked over the flights of stairs and the landings between floors, and its members committed their official signatures. As it should be, the latter comes under the official document, which means: accept the building for operation with a rating of "good", signed the chairman of the commission.

And so the builders turned over the building. The facility was brought in solidly above the percentage. And if the percentages were high, then a bonus is stipulated. The builders, it goes without saying, were satisfied.

Days went by, weeks went past, and the building was not occupied. We waited longer and are still waiting; we discussed its future residents, feeding the hope that such an important event for them would be made to coincide with the Great October Holiday. However, the holiday passed and the new arrivals for the building still did not appear. December came to replace November, but even in December, the keys to the apartments were not turned over to anyone. Then a group of officers and ensigns wrote to KRASNAYA ZVEZDA: "We earnestly ask that you help us in resolving the question of the occupation of the building which was turned over for operation on the 28th of September, but which until now has still not been occupied. . ."

It was explained further on in the complaint why the building was not being occupied. The heating did not work, there was no gas and the wash-basins and toilets had not been installed.

Immediately after the new year, I arrived at the garrison from which the complaint came in and I can certify: the lights in the new building didn't even come on either on the new year night, and probably, they will not come on their for two to three more weeks. The official document was signed in September, but in January, the building still stands empty.

Why then has the building been empty for four months. Before answering this question, it should be noted that it was erected by its builders at an envious pace. As they say, the building grew up before your eyes. But it grew up and froze. It froze because with the bringing in of the lines to it, primarily the heating mains, there was a breakdown.

According to the first variant, the length of the heating line which was to be installed by the military builders was 250 meters, according to the second variant, now about 600 meters, and according to the third, even more: 800 meters. The variants were discussed and the decision was re-reported through the chain of command, and the time was lost. It is quite natural that the work dragged on to an extraordinary degree and was only completed after the 20th of December. The exterior gas piping was finished and laid literally on New Year's Eve.

Thus, there was no heat, there was no gas and the commission headed up by chief of the operational quarters section, Major Engineer Yu. Ivanov, the building was accepted, and with a good rating at that. I was not a witness as to how the acceptance of the building went and what conversation took place between the members of the commission and the builders - area commander V. Kukushkin, and UNR [not further defined] chief, Colonel Engineering Services V. Yefimov. But based on what I saw with my own eyes in January, it is not difficult to say that the members of the state commission were not exacting. The long list of unfinished work, which has not yet been eliminated, is evidence of this.

The builders justified themselves with: is it worth it to pay attention to petty details? The residents, if you will, should settle in, lodge their claims and then we will do everything. And is it not better to eliminate the defects when the building is unoccupied? This is the first thing. Secondly, no matter what promises the builder made, the residents can hardly expect complete satisfaction of their requests. As things now stand in the kitchen of apartment No. 9, with the heating radiator having a bent and crumpled convection cover, that's how they will stand. No one now is about to replace this radiator. Not to mention redoing the slip-shod welding of the pipe or cutting off the protruding ring.

There is a line in the socialist obligations of the UNR collective that the builders will not spare any effort in fight for high quality facilities. In looking at the results of their labor, you come to the conclusion that the fight for quality is being poorly handled.

The indifference of the chairman of the commission, Major Engineer Ivanov is surprising. The impression is gained that all of this does not bother him at all. I call the attention of comrade Ivanov to the rather solid hole in the garbage disposal duct.

"Trifles, we will not use the garbage duct," he replied and started to argue that the chambers and receiving valves themselves are of an unsuccessful design, not suited for operation.

But if they are really not suitable, then why was approval given for their installation? In a word, according to the conclusion of the chief of the quarters operations unit, the garbage duct was doomed to inactivity.

"We shall put boxes in the yard, and the residents will haul the trash there in buckets," he stated in a peremptory manner.

The major engineer likewise had a unique reaction to the remark that one of the floor plates of the stair landing had humps and potholes.

"After about 10 years they won't be there. The residents will polish the floor with their soles," joked the commission chairman.

In all honesty, this was the first time I had met such a quarters operations unit chief, who instead of protecting the interests of the residents, somehow undertook to protect the builders. It is true, somewhat later comrade Ivanov remarked, "Well I did sign the official document." And this is just why it is in vain to wave your fists. Yes there is a logic in this. But there is none in the fact that both the chairman and the members of the commission bought a coat without the sleeves - they accepted a modern residential building for service without the underground mains.

And there is yet something else you can't be quiet about. The officers and ensigns turned to the editorial staff with the complaint because need forced them to. Captain A. Vasilevich, for example, has already been living for three months in a hotel with his family. Ensign V. Merkulov was forced to send his wife and two children to her parents. Unfortunately, the supervisory comrades who were in the garrison painfully received the appearance of the complaint. Such a position can hardly be called correct.

However, we shall return to the building. It is thought that the senior commanders and the political organs will make a basic assessment of this entire story.

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## BOOK REVIEW: TOLUBKO'S BIOGRAPHY OF NEDELIN

Moscow KRASNAYA ZVEZDA in Russian 20 Jan 80 p 2

[Article by Marshall of the Artillery P. Kuleshov: "A Brilliant Example of Service to the Homeland"]

[Text] The "Molodaya Gvardiya" publishing house has published in its series, "The Life of Remarkable People", the book by General of the Army V. Tolubko, "Nedelin. The First Commander in Chief of the Strategic Forces".\* It recounts the life and military career of the famous and talented battle commander, and reveals the most important period in the development of the Soviet armed forces, related to the creation and deployment of nuclear missiles with the troops.

I, personally well acquainted with Mitrofan Ivanovich Nedelin, would like to underscore the fact that the author has successfully revealed in a deep and multifaceted manner a fascinating portrait of this remarkable man, expressively communicates all of the passion and purposefulness of his feverish activity to strengthen the combat might of the Soviet armed forces and assure the safety of our socialist homeland. This was undoubtedly aided by the author's good knowledge of the front line and postwar activity of M. Nedelin and their joint work in the field of creating and expanding the Strategic Rocket Forces.

The life of M. Nedelin is traced in detail in the book. The gifted youth from a working family was distinguished from his early years by an insatiable thirst for knowledge. Having become an artillery commander, Nedelin works a great deal and with considerable intensity, earnestly engaged in self-education, he independently studies the theory and practice of artillery fire. Thus, the maturity of a commander comes to him.

Of undoubted interest are the pages telling of the participation of M. Nedelin in the struggle of the Spanish people against reaction and Fascism.

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\* V. Tolubko. "Nedelin. Pervyy glavkom strategicheskikh", "Molodaya Gvardiya" publishers, 1979, 222 pp, price 1 ruble 20 kopecks.

The outstanding capabilities of M. Nedelin, as the author emphasizes, were revealed particularly brilliantly during the years of the Great Patriotic War. He accumulated experience with the combat units of artillery from battle to battle in fighting a strong enemy. He was distinguished by a broad tactical and operational field of view, the striving to avoid fixed patterns in operations, knowing how to find new ways and methods of combat use of artillery as well as how to rapidly introduce them into troop practice. In war, he traveled the path from commander of an antitank artillery brigade to artillery commander of a front.

The author cites many documents and the recollections of eye witnesses which reveal the outstanding capabilities of M. Nedelin as a great artillery battle commander, in the refinement of the state of the art achieved in managing large masses of artillery in all kinds of operations. The qualities he acquired on the fronts of the Great Patriotic War became the reliable foundation of further fruitful work in the post-war period. He devoted a great deal of effort to generalizing the combat experience, its introduction into the practice of training artillery units and subunits.

The name of the commanding marshall of the artillery, M. Nedelin will always be linked to the creation of a new branch of the nation's armed forces: the strategic rocket forces. His deep military and technical knowledge, brilliant organizational capabilities and purposefulness in many respects assisted in the successful resolution of complicated organizational, scientific, engineering and special questions, which confronted the rocket forces.

The intensive activity of M. Nedelin to develop the organizational staff structure of the rocket forces, select and train personnel, capable of carrying out the important missions assinged by the communist party and the Soviet government, in the organization of tests, mastery and assignment to combat duty of a new weapon, the working out of questions of combat application and administration, and the creation of the requisite conditions for the life and activity of the troops is presented on a wide scale in the book. A great deal which is instructive is also told of the work style of the first commander in chief of the strategic forces, his ability to see, ascertain and solve the main problem, but without overlooking the details, on which the combat capability and readiness of the rocket forces depended.

It is no accident that it was specifically M. Nedelin whom the party and government entrusted with heading up the new branch of the armed forces, which became the basis for their combat might. It is convincingly shown in the book that M. Nedelin took an active part right from the first postwar years in the development and testing of nuclear rocket weapons, the creation of a scientific experimental base and the introduction of nuclear rocket weaponry in the troops.

The role of the distinguished political, governmental and military leaders of our nation in the creation and development of the Soviet nuclear rocket weapon, the new branch of the armed forces, is also portrayed in the book in a deep and multifaceted manner. The personal recollections of the author of the activity of comrades L.I. Brezhnev and D.P. Ustinov in the development of rocket equipment, creating the first rocket formations, their trips to design offices, to proving grounds to rocket units and formations, as well as recollections of meetings with rocket troops are also interesting.

The book by General of the Army by V. Tolubko about M. Nedelin will be read to advantage by all who are interested in the development of the Soviet armed forces. It is especially to be recommended for our young people, since the life of M. Nedelin is a brilliant, inspiring example of selfless service to the homeland.

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## GENERAL ALTUNIN REVIEWS CIVIL DEFENSE TASKS

LDI71325 Moscow KRAYNAYA ZVEZDA in Russian 12 Mar 80 p 2 LD

(Article by Army General A. Altunin, chief of the USSR civil defense and USSR deputy defense minister, under "Civil Defense" rubric: "An Important Matter for All the People")

[Text] By their selfless labor the Soviet people are implementing the economic and social program outlined by the 25th CPSU Congress. For the successful solution of constructive tasks peace is necessary. The CPSU and the Soviet Government steer an invariable Leninist foreign policy course--a course of peace, the relaxation of international tension and the curbing of the arms race.

However, the normalization of the international situation does not suit reactionary imperialist circles. The forces of aggression and militarism are not ceasing the material preparation of war and are spending ever new billions on military preparations and developing increasingly devastating types of weapons of mass destruction.

Our party and state consider all this and are doing everything for Soviet people to be able to live and work peacefully. "We have everything necessary to rebuff any military provocations," Comrade L. I. Brezhnev said in his speech to the voters of Moscow's Baumanskiy Okrug.

Equipped with modern weapons, the USSR armed forces, living the same thoughts and the same breath as the people, boundlessly devoted to the cause of the party and educated in a spirit of Soviet patriotism and internationalism, are reliable guards of the fatherland's security.

Civil defense is an important component of the country's defense capability. Involving all the people in its essence and content, it pursues the most humane and noble goals: In the event of war being unleashed by aggressive circles to safeguard the state's vital activity and the population's protection against modern means of attack, and to reduce losses to a minimum. The creation of a reliable civil defense is an objective necessity conditioned by the aggressive aspirations of imperialism and

its accomplices and by the threat of war. As long as the enemies of peace continue the arms race and fuel military hysteria the party and entire people are obliged to devote due attention to civil defense and to improve it tirelessly.

Thanks to the concern of the party Central Committee and the USSR Council of Ministers and to vigorous activity in this important sector by local party and soviet organs, the civil defense system's readiness to resolve the tasks set it is constantly strengthening. The improvement of civil defense is carried out in the mainstream of the implementation of the party's plans aimed at improving the efficiency and quality of all our work.

The course toward efficiency and quality means that any training measure in the civil defense system must be carefully prepared and comprehensively backed up. Emphasis is placed on the introduction of advanced methods and the most expedient forms of instruction. Exercises, especially comprehensive exercises at establishments, are held under conditions close to those which could take shape in wartime. In resolving tasks in a complex situation the trainees acquire essential skills and physical, moral and psychological tempering. As a result the reliability of civil defense of national economic establishments is increased. Special attention is naturally paid to training leading, command and chief staff, nonmilitarized formations and military civil defense sub-units.

There are many labor collectives where civil defense tasks are resolved in a high-quality and purposeful manner. Last year, for instance, high indicators were achieved by Kiev's "Vulkan" plant, the Minsk No 2 state ballbearing plant, the V. I. Lenin electrical engineering plant in Riga, Kishinev's "Mezon" plant, the "Kirgizavtomash" automobile machine building plant, the "Bortniki" Sovkhoz, Kiyevskaya Oblast, and the "Voskresenskiy" Sovkhoz, Moskovskaya Oblast. There are civil defense competition leaders in every city and rayon.

Naturally, matters proceed best where the leaders of establishments, party committees and public organizations investigate the state of civil defense in depth and where the attention of the working people and entire population is focused on it. It may be noted with satisfaction that the work aimed at improving the reliability of an establishment's civil defense is reflected in the most positive way on the cohesiveness of the collective, on the consolidation of labor discipline in it and on the fulfillment of production plans.

The nonmilitarized formations and military civil defense subunits which have gained good practice at drill and exercises have shown themselves at their best in the struggle against the results of natural disasters. They have countered staunchly and courageously the natural disasters which raged in the Baltic republics, Belorussia, Saratov, Semipalatinsk

and elsewhere. During their ordeals Soviet people displayed not only organization and the ability to perform rescue and urgent emergency restoration work successfully but also true selflessness and wonderful moral and political qualities.

Experience convinces us that the thorough preparation of establishment exercises makes it possible to improve markedly the quality of training of the personnel of nonmilitarized formations and military civil defense subunits and to use time more rationally.

In the past training year the comprehensive exercises at the Beskudnikovo construction materials combine (Moscow), the Mytishchi machine building plant, the Illichevsk sea port and a number of other projects have been extremely instructive. The tense and dynamic situation created by the leaders of the exercises made it possible to rehearse in full measures to protect the population, organize production activity and carry out rescue and urgent emergency restoration work.

This year we must consolidate what has been achieved and achieve a further improvement in the efficiency of comprehensive exercises. The civil defense staffs' task is to conduct exercises at establishments where they have not previously been held and to pay attention to the sectors where shortcomings have been revealed.

[LD171327] In holding exercises it is important to make sensible use of every minute and to create conditions enabling leading personnel, nonmilitarized formations, workers, employees, kolkhoz members and the nonworking section of the population to gain the maximum skill. The nature and content of training missions must be in line with the specific tactical situation and have a clear goal--to improve the reliability of the facility's civil defense and insure its stable production activity in wartime. The training of nonmilitarized general-purpose formations and services deserves special attention. Their personnel must be equipped with the skills to operate in various centers of contamination and must resolve tasks together with other formations and military civil defense subunits equipped with mighty hardware.

The necessity of maintaining high civil defense readiness demands the tireless improvement of methods of protecting the country's population and national economy against all means of destruction, the creation of the requisite material base for this, the implementation of an appropriate package of organizational, engineering and technical measures, and also the further improvement of the training of all categories of people under instruction.

Leading personnel's responsibility for the quality of training activities is increasing. Leaders must have a profound knowledge of the demands of the main civil defense documents and means and methods of protection against modern weapons and must grasp advanced methods. The constant

training of leading personnel is one of the main elements in improving the whole civil defense system.

This training takes various forms. It includes training on civil defense courses and the holding of meetings organized at short notice, group exercises and staff training sessions involving leading and command personnel. Leaders learn to plan and implement organizational, engineering and technical measures to protect people and safeguard facilities' production activity, to assess the prevailing situation correctly and to take valid decisions on organizing civil defense. At the same time they acquire the skills to train subordinates and master advanced methods. Civil defense staffs and services master methods of rapidly collecting and analyzing data on the situation and preparing the suggestions the leader needs for decisionmaking, draw up various administrative documents and learn to inform executives of them efficiently and to monitor their implementation. The supreme form of training for leading personnel is command and staff exercises rehearsing various questions of the facility's civil defense. These usually precede a comprehensive facility exercise.

The quality of specialized tactical studies and exercises within the civil defense system depends to a large extent on the leader's ability to exploit the mobilizing force of socialist competition. This training year the servicemen of the unit commanded by Lt Col L. Grokholskiy have been the initiators of competition among the personnel of civil defense subunits. Specific pledges have been adopted everywhere. The struggle to fulfill them, to surpass the set normatives and to rehearse every training question in exemplary fashion must permeate all studies.

By their nature civil defense tasks make high demands of people's political and moral and combat qualities. Civil defense chiefs at every level, staff personnel and party and Komsomol activists are called upon to implement persistently the demands of the CPSU Central Committee resolution "On Further Improving Ideological and Political Education Work" and to instill in people high political vigilance and constant readiness to defend the socialist homeland.

In propagandizing civil defense it is necessary to explain skillfully and clearly to the population the humanity of its aims and to educate people in the glorious traditions of older generations and examples of courage and heroism. The experience of organizing civil defense during the Great Patriotic War is of enduring value. The achievements of leading collectives and examples of combat collaboration between civil defense servicemen and nonmilitarized formations must be known to all. Civil defense days, weeks and months have proved their worth as a good way of propagandizing civil defense knowledge and leading experience. Where they are held regularly their role in Soviet people's military patriotic education is effective.

The course of efficiency and quality characteristic of all our society's life is also consistently pursued in the sphere of improving civil defense. The efforts of party, soviet and economic organs and the military command must merge in this important area. To mark the 110th anniversary of V. I. Lenin's birth and the 35th anniversary of the Soviet people's victory in the Great Patriotic War by solving civil defense tasks to still better standards is to make a fitting contribution to strengthening the motherland's defense capability and insuring the reliable defense of the people's creative labor and socialism's great gains.

CSO: 1801

## MULTIPLE ROCKET LAUNCHERS: DEVELOPMENT REVIEWED

Bonn TRUPPENPRAXIS in German No 2, 1980 pp 111-122

[Text] The article deals primarily with rocket launcher divisions of the USSR, but it also deals with non-Soviet Warsaw Pact nations, insofar as their equipment differs from that of Soviet armed forces.

Finally, the article contains a chapter about the launcher troops of the German Wehrmacht.

The author, assistant reviewer at army headquarters, last wrote the TRUPPENPRAXIS in No 8, 1979 about medals of the Soviet Union.

### The First Battery

On 14 July, 1941, 3 weeks after Germany launched its attack in the East, the Red Army's only rocket launcher battery at that time, an experimental unit, fired its first round on the enemy. It hit the Orsha railroad junction of the Minsk-Smolensk-Moscow line, which was filled with German troops and supplies of great importance to the Mitte army unit, which was advancing on Moscow. According to Soviet reports, the launch is said to have inflicted large casualties on the Germans and to have caused panic.

Soviet leadership ordered on the following day the mass production of the multiple rocket launchers called "Katyusha" which means "little Katharine," also called "Maria Ivanovna" by Soviet soldiers. The builder of the new weapon, Maj Gen Kostikov, an engineer, had been given the title "Hero of the Soviet Union" as early as August 1941. Immediately after it was first deployed, the German supreme commander is said to have ordered the capture of the "automatic multibarrel gun" which soon became known as "Stalin organ" in military jargon.

BM-13

The development of the first prototype of the multiple rocket launcher had been concluded as early as 1939. The weapon known as BM-13 (BM for boyevaya mashina, which means combat vehicle. The number roughly represents the

the caliber in cm) was able to launch 16 rockets within 8 to 10 seconds from a launching pad consisting of 8 dual T-tracks in one position. The rockets had a caliber of 132 mm, weighed 42.7 kg and carried 4.9 kg of explosives over a maximum distance of 8,500 m. Their maximum speed after burnout was 350 m/sec. A three-axled truck of the ZIS-6 type (Figure 1) served as carrier vehicle. The crew consisted of 7 men: commander, gunner, assistant gunner, driver and 3 loaders.

At the beginning of the war, the Red Army had all of eight launchers at its disposal. At the end of June 1941, the above-mentioned experimental unit was formed at the Aprilevka training field near Moscow. It was divided into one lead platoon, three firing platoons, one fire control platoon, one ammunition platoon and several supply units. The equipment of the battery consisted of five multiple rocket launchers BM-13, one 122 mm field howitzer as fire direction gun and 44 motor vehicles for supplies. The battery was deployed a few more times in the Smolenka area, got caught at the beginning of October 1941 in the Vyasma basin and, after an attempted breakout had failed, destroyed its rockets which were in danger of being captured.

#### BM-8

The first rocket launchers of the light BM-8 type were deployed almost simultaneously with the BM-13. The launcher, which at first was also mounted on the ZIS-6 truck, was able to fire 48 82 mm caliber rockets from its track arranged in two positions. (Figure 2). Their range was 5,000 m. Other BM-8 versions were designed for 36 rockets, and later, launchers of this type, along with launch tracks for 24 rockets, were mounted on T-40 and T-60 tanks as well as the STS tractor. After supplies from the United States arrived, Studebaker and Chevrolet trucks were also used for both types of launchers.

#### The Garde Grenade Launcher Forces in World War II

The Soviet leadership recognized quickly that the multiple rocket launchers are relatively easy to produce and extremely effective. It ordered, still in August 1941, the immediate forming of eight and later of an additional six rocket launcher regiments which were to be placed under the "Reserve of Top Command"--in order to form points of concentration. These and all later divisions were given the title garde, which did not even come into being until September 1941--a title given to other branches only after they had proven themselves in combat. With this, the great importance of the new weapons system was to be emphasized and the specially selected soldiers of the new units, now called "garde grenade launcher forces" (MGCh, meaning Gvardeyskiye Minomyetnyye Chasti) were called upon to give their utmost.

But the planned integration of the newly formed units in the "Reserve of Top Command" could not be realized. The critical combat situation called for the reorganization of some of the regiments into independent battalions so that the units in combat could receive immediate support in as many areas as possible.

At the beginning of 1942, the Red Army had more than five launcher regiments and 74 independent launcher battalions at its disposal. Each regiment consisted of three battalions, each battalion of three batteries with four launchers each. A little more than half of the divisions were equipped with the BM-13 launcher, the rest with the BM-8.

#### M-30

In addition to forming more BM-8 and BM-13 divisions, the formation of heavy rocket launcher divisions was begun in mid-1942. These were equipped with spin stabilized M-30 rockets, which could be launched with the help of a frame (RAMA M-30) (Figure 3). The rockets had a caliber of 300 mm and a weight of 72 kg. Their range was only 2,800 m. Their vulnerability, because of their short range, and the low mobility of the battery were compensated for by the fact that they could be deployed successfully against field fortifications and against armored vehicles, against which the lighter launchers had not been effective enough. The heavy batteries had 32 frames each at their disposal, with which 128 rockets could be launched.

Because of the forced increase in the rocket artillery, in November 1942 the Red Army's Garde Grenade Launcher Forces consisted of 20 light (BM-8), 17 medium (BM-13) and 85 heavy (M-30) independent rocket launcher battalions, as well as 19 light and 62 medium rocket launcher regiments, that is, a total of 365 battalions.

From the end of 1942 on, the combining of heavy battalions with rocket launcher brigades for the fronts (several armies and divisions), and the formation of rocket launcher divisions for the "Reserve of Top Command" was begun. The latter were at first divided into four BM-13 regiments and two M-30 brigades and were able to launch 3,840 rockets weighing a total of approximately 230 tons with one salvo.

From May 1943 on, the garde grenade launcher divisions were divided into three heavy brigades with four battalions to three batteries.

#### M-31

Simultaneously, the first 300 mm rockets of the M-31 type were delivered from the beginning of 1943 on. Their range was 4,300 m and considerably increased the possibilities for deployment of heavy launcher divisions.

The further increase and the growing significance of the rocket launcher units also necessitated organizational revision. While in 1941 their deployment was still directly under the Highest Leadership, in 1942 the garde grenade launcher forces received their own commander and headquarters were formed for the administration and supply of the new troops which were considered to be a branch of the artillery.

In order to secure better fire coordination between the regular artillery and the rocket artillery, the latter were deprived of their independence in April 1943 and the launcher units were placed under artillery command. For the

former commanders of the launchers, the position of a "Deputy Artillery Commander for Affairs of the Garde Grenade Launcher Forces" was created. The rank of commander was formally retained, but his staff was integrated in the Red Army's artillery (the last commander of the Garde Grenade Launcher Forces was Artillery Commander N. N. Voronov from August 1944 until the end of the war).

#### **Further Improvements**

Even after integration into the artillery, new units continued to be formed and their equipment continued to be improved. The M-13 UK and M-31 UK rockets, which were introduced in 1944, lessened straying because of improved ballistic properties, and thus achieved greater accuracy of fire. And in April 1944, the heavy launcher units replaced the launch frames placed on the ground with BM-31 type mobile launchers, with which 12 rockets could be fired from a grate-like launch pad mounted on a truck (Figures 4 and 5). The heavy launcher divisions were combined with the regular artillery to form the "breakthrough artillery corps" and "breakthrough artillery divisions."

At the end of the war in 1945, the Red Army's garde grenade launcher forces had 7 divisions, 11 independent brigades, 114 independent regiments and 38 independent battalions, equipped with a total of 3,081 multiple rocket launchers. In addition to the T-34 battle tank, Katyushas became the best known and most dreaded Soviet weapon of World War II.

#### **The Wehrmacht Rocket Troops**

Soviet historians, on whose data the above article is essentially based, do not mention the fact that the German army had and deployed multiple rocket launchers even before the Red Army did. However, while the Soviet launcher had been conceived from the beginning as an artillery surface weapon, the German launchers were created more as a byproduct of a development with completely different goals in mind. Under the impression of the deployment of chemical warfare in World War II, the Imperial Army secretly began to prepare a unit which could deploy such war materials as well as fight its effects.

Building upon experimental regiments of the Imperial Army, the Wehrmacht in the fall of 1935 created a new branch which was kept top secret and whose actual mission was the deployment of and defense against chemical warfare. Publicly, however, only the deployment of smoke screens on the battlefield as well as the reconnaissance and decontamination of contaminated areas as their mission was emphasized.

For that reason, the new branch received the designation "smoke troops." Their branch color was established as Bordeaux-red.

At the beginning of the war in 1939, there existed three smoke units (battalions) and one smoke unit (training and operational). They were equipped with the 10 cm smoke canister launcher 35, which corresponded in construction and

appearance to a mortar, and could fire smoke, chemical or explosive ammunition. With this equipment the units took part in the Polish and French campaigns. Since an adequate concentration of smoke or chemical materials could not be achieved with the smoke launcher 35, the experimental use of rockets which, in contrast to heavy artillery, had not been prohibited by the Versailles Treaty, was already begun in the Imperial Army. The Wehrmacht continued these experiments and later Maj Gen Dornberger developed the 15 cm Smoke Launcher 41 which was also called the "Do Launcher" after its creator. (Maj Gen Walter R. Dornberger was head of the army's Peenemuende Experimental Institute at the end of the war and developed there the V-2 rockets together with Wernher von Braun. After the war he worked for the Bell Aircraft Corp. in Buffalo, United States, and became its vice president for research). This towed launcher with split trail could fire a salvo of six rockets within 10 seconds (See Figure 6). The rockets weighed 34.7 kg and had a range of 6,700 m. The maximum velocity at burnout reached 340 m/sec. In contrast to the Soviet rockets, the propellant was in the nose and the explosive charge in the tail of the rocket. On impact, the explosive therefore detonated above the ground and achieved a greater fragmentation and density result. (When the fire is concentrated, pressure differences in the impact area cause lung damage. This led to the legend of the "pressure air grenades," to which the Soviet Union is said to have reacted with a threat of a gas war. Such a threat can in fact not be substantiated in the war literature).

After the new launcher had proved itself within the training and experimental unit during the Polish campaign, it went into mass production. In the meantime, it was decided that none of the warring powers would dare to use chemical warfare. Furthermore, the 1939 Blitzkrieg had shown that "smoke" had hardly been used. Therefore, the development of rockets with explosives, which had been neglected until then, was pushed with more emphasis. After the demonstration of a battery of 15 cm launchers with explosives before the army commander in chief on 18 April 1940, the field applicability of the weapon as a multiple rocket launcher was determined and the formation of the first launcher regiments was ordered.

At the beginning of the Russian campaign on 22 June 1941, the German assault divisions were supported by four launcher regiments, the 51st, 52nd, 53rd and 54th, as well as a unit of the research and development regiment. The latter initiated the attack on 22 June 1941 at 0315 h with mixed salvos of explosive and smoke rounds and thereby supported the Bug crossing in the Sokal area. Within 30 minutes, the unit's two deployed batteries fired 1600 rockets. The 51st regiment, later destroyed with the 53rd regiment in the Stalingrad "Cauldron," already proved itself at the end of June 1941 during the battles for Minsk, that means, also before the first use of the Soviet Katyusha.

The first Wehrmacht launcher regiments consisted of three battalions with three batteries each. The batteries had six launchers with a total of 36 barrels at their disposal. The regiment could therefore fire a salvo of 324 rockets, i.e. only 56 percent of the number of rockets that a Soviet BM-13 regiment could put on target with one salvo.

In addition to the 15 cm launchers, the heavy launchers 40 and 41, respectively, were also supplied to the divisions, which was probably the model for the Soviet racks for the M-30 rocket. From these launch frames built of wood (Model 40) or iron (Model 41), four 28 cm explosive or four 32 cm incendiary rockets, with a payload of 50 kg each, could be fired out of their packing cases (Figure 7). Their range was approximately 2,000 m. The weapon, which was known among the troops as "Stuka on Foot," were soon given to the engineer and infantry regiments because of their limited maneuverability. The smoke troops, which in the meantime have also been called "launcher troops," received instead the more developed 28/32 cm smoke launchers 41 (Figure 8) as equipment for the heavy launcher divisions. With them, six 28 cm explosive rockets or, after exchanging the tracks, six 32 cm incendiary rockets could be launched.

Furthermore, the 5-barrel 21 cm launcher 42, which could also launch 15 cm rockets with the use of tracks, was developed while the gun carriage of the 15 cm launcher 41 was retained. It reached a range of 7,850 m with the 21 cm ammunition.

Finally, the 10-barrel 15-cm armored launcher 42, for which the self-propelled mule served as carrier vehicle, was introduced as equipment for the so-called armored launch batteries. Besides that, in the last months of the war, crates of the 28 cm and 32 cm shells, in other words the "Stuka on foot," were also mounted on armored personnel carriers and were deployed as mobile rocket artillery.

The following model for the 28/32 cm smoke launcher 41 of the heavy launcher units, the 30 cm launcher 42 which looked very similar to it, was not delivered until shortly before the end of the war. It had a range of 4,500 m and could also fire 15 cm rockets and 21 cm rockets as unit launcher after installation of tracks.

The German launcher units were deployed during the war in many crucial points of the attack and the defense with great local success. They were held in high esteem by the infantry which they supported and they suffered many casualties. The new troops did not gain decisive significance, because the German leadership had no clear plans for their deployment and only moderately pursued further development. The independence of the new branch, i.e., its nonintegration into the artillery, appeared to have been the reason why its potential was only little exploited. In addition, Hitler was skeptical about the rocket as a method of deployment and emphatically pushed the development and construction of tanks and the conventional artillery, although the launcher units would have been especially suited for the defense against the Soviet mass attacks and the artillery supporting them.

So the launching units, scattered widely over the whole Eastern front, were often deployed as batteries. Often the units were "sacrificed" as a last resort in crises or--because of frequently missing ammunition supplies--were deployed as infantry and worn down. Not until mid-1942 were the armies given "smoke troop commanders" and later, launcher brigade headquarters were created in order to secure the uniform deployment of the units.

The number of the units deployed during the war cannot be ascertained because of the constant change between losses and reassemblies. According to the top command of the army, there were in early 1945, at least on paper, 15 launcher brigades with a total of 30 regiments in three battalions.

The brigade included four 15 cm units, a 21 cm unit and a 30 cm unit with a total of 108 launchers or 630 barrels.

One part of these brigades, the "People's Launcher Brigade" which had been formed in a hurry, was only partially motorized, others--the so-called position launcher brigades--did not have any kind of carrier vehicle for the launchers. In addition there were--as far as they had not been destroyed--13 armored launcher batteries as well as the six SS launcher divisions formed in 1943.

#### Soviet Postwar Developments Until 1964

After the end of World War II, the Western nations presumed that atomic weapons would be the most effective means against surface targets in the future. Therefore, they initially concentrated exclusively on the development of heavy artillery rockets as carriers of atomic warheads of various detonation properties.

Although the Soviet Union followed this trend, it nevertheless simultaneously maintained the equipment with multiple rocket launchers and continued the development of this conventional surface weapon.

#### BM-14

After the BM-13 and BM-31 models remained a few more years in the units on modern transport vehicles and with improved ammunition, in 1952 the replacement of the medium BM-13 launcher by the 16-shot successor model BM-14 mounted on the 2.5 t ZIL-151 truck (6 x 6) was begun (Figure 11). In 1959, a 17-shot version of this launcher was introduced chiefly for the deployment of airborne units, which used the lighter double-axle GAZ-63 truck as a transport vehicle. Both BM-14 models used for the first time barrels in place of the launching tracks for the guiding of the rockets during the launch. From 1964 on, the BM-14/17 was eventually replaced by a single-axle self-propelled launch removable by parachute, which is, as a rule, transported by the light half-ton GAZ-69 truck or by its successor, the UAZ-469. The launcher referred to as RPU-14 or BU-14 (reaktivanya ustanovka = rocket launch lafette. BU = boyevaya ustanovka = combat lafette) in the Soviet Army likewise uses launch barrels for the control of its 16 rockets during the launch (Figure 12). The spin-stabilized M-14 rocket, which is used by all the 140 mm launchers, has a weight of 39.6 kg and a range of 9,800 m.

#### BM-24

In 1953 the WK II launcher was replaced by the heavy BM-24 launcher which initially also used the ZIL-151 truck and from 1956 on the more modern ZIL-157 as carrier. It could shoot 12 rockets weighing 112 kg over a distance of 10,200 m from a grate-shaped launch pad.

A version of this type, the BM 24T, appeared from 1957 on. It used the AT-S artillery tractor as a transport vehicle and shot the same 240 mm rockets as the BM-24 on a truck from 12 barrels arranged in 2 positions. (AT-s = artilleriyskiy tyagach, sredniy = medium artillery tractor). (Figure 14)

#### BMD

The "BMD long-distance launchers" (D for "dal'noboynyy" = wide-range) eventually formed their own class of launchers, which could shoot a small number of rockets over large distances. As the first model of this class, the BMD-20 on the ZIL-151 truck, which could shoot four rockets weighing 194 kg each, over a distance of up to 20,000 m was introduced in 1954 (Figure 15). Its successor was the heaviest and most far-reaching Soviet launcher thus far, the BMD-28 on the YaAZ-214 truck, which shot 6 4.80 m long rockets weighing 455 kg each as far as 30,000 m from round, grata-like frames (Figure 16) (In the West, this rocket is often called BM-25).

#### Postwar Developments of Other Communist Nations Until 1964

The ground forces of the non-Soviet Warsaw Pact states accepted the Soviet launchers almost without exception. Only Czechoslovakia developed its own model, the RM-130. The launcher, which was introduced as early as 1951, has 32 short launch barrels for 130 mm rockets weighing only 24.2 kg with a range of only 8,200 m. The PRAGA V-3S truck serves as carrier for the launcher which is still used today by regiments in the Czech People's Army (CVA). Towards the end of the 1960, the antiquated launcher, switched over to the ZIL-151 and ZIL-157 trucks, was adopted also by the Romanian People's Army. The Austrian army also still has a few launchers of this type. As for the rest, only Poland developed its own mobile guided launcher for its airborne troops. It is similar to the Soviet RPU-14, uses the same ammunition, but has only 8 barrels. A mobile guided launcher for 32 128 mm rockets was also produced in Yugoslavia and introduced to the Yugoslav People's Army in 1963. It is called "Kacusa" and is still in use today.

#### The Soviet Multiple Rocket Launcher BM-21

There was a rapid succession in the development and introduction of various types of launchers in the Soviet Army. This ended in 1964 with the introduction of the 122 mm BM-21 launcher (number of type and caliber do no longer agree with this launcher).

The new model was conceived as a unit launcher and quickly replaced all models used previously by the Soviet Army because of its salvo range, fire sequence, range and weight. Only the guided RPU-14 continues to be used by the airborne units because of its specific suitability.

The non-Soviet Warsaw Pact armies also took over the BM-21, but with some modifications regarding the carrier and the number of barrels, which is dealt with below.

The following table shows data of presently used standard weapons systems of the rocket launcher divisions of the Warsaw Pact ground forces (See Figures 17 to 20)

#### Launcher

Number of barrels:	40 (4 x 10)
Length of barrel:	3 m
Barrel diameter:	122.4 mm
Gun angle of elevation:	0° to +50°
Angle of pintle traverse:	240°
Type of fire:	Serial, part-serial, single fire
Rate of fire:	2 shot/sec
Reloading time:	10 to 15 min
Crew:	1:4

Rockets	Short Type	Long Type
Length:	1910 mm	2870 mm
Weight:	45.8 kg	66 kg
Maximum range:	11,000 m	20,500m
Initial Thrust:		6,000 to 8,000 N
Velocity at burnout:	690 m/sec	
Warheads:	Fragmentation-explosive type 21 OP and chemical warfare	
Fuse:	Impact fuse with or without delay action	
	Spin- or surface stabilization	

#### Carrier Vehicle

Type:	4.5 t gl URAL 3/5 truck (6 x 6)
Weight (without launcher):	8,400 kg
Engine performance:	128.7 kW (175 PS)
Maximum speed:	75 km/h
Range:	405 km
Combat weight:	13,000 kg

#### BM-21 Variations in the Non-Soviet Warsaw Pact States and in the Third World

Among the BM-21 variations which have up to now become known, the Czechoslovak version stands out which, besides requiring a carrier vehicle of domestic production, shows a clear combat superiority.

The 10 t gl TATRA-813 Kolos truck serves as carrier vehicle to the weapons system which was introduced in Czechoslovakia under the designation of Rb-70. (Figure 21). The increased carrier capacity, length, and the engine performance of this carrier vehicle permitted the installation of a hydraulic recharging device between the cab and the top-mounted rocket launcher. With it, a complete series of 40 rockets can be carried along, and the launcher can be

automatically reloaded within 2 to 5 minutes. This shortening of the reloading time increases the tactical maneuverability of the launcher: It can either deliver two salvos from the same firing position or can, without losing time, be deployed again from a different position.

Furthermore, the Czechoslovak cab was equipped with an armor covering. Because of the absence of such protection, the Soviet BM-21 must, in order to avoid damage to the cab, continually take up position perpendicular to the line of fire and, in case of a sudden change of target, change its direction of aim under certain circumstances. Finally, a sweeper can also be attached to the front of the TATRA-813, with which obstacles can be cleared away and protective covers can be removed.

The Czechoslovak RM-70 launcher, which has a battle weight of 23.3 t and a driving range of 1,100 km, was also introduced in place of the Soviet BM-21 to the National People's Army of the GDR. (Figure 22)

With other BM-21 variations, the number of barrels was merely reduced in order to make them suitable for weaker carrier vehicles mostly of domestic production or for more difficult terrain conditions. In this way, the Romanian strike forces utilize a version with 21 barrels (seven barrels in three positions) on the four t gl BUCEGI SR-114 truck, which is produced in the country. The Cuban intervention troops in Angola used a BM-21 launcher with 34 barrels: Only four barrels, instead of another 10, were placed on the lower three positions with 30 barrels. BM-21 variations with 30 barrels (10 barrels in three positions) were also observed in Egypt, and secretly at a parade in Pakistan.

Otherwise, the Soviet Union used the countries of the Third World mainly as recipient of its outmoded models: Egypt received BM-24's, among other things, for the Yom Kippur War of 1973; in Ogaden in 1977/1978, Somalian BM-14's and Ethiopian BMP-20's faced each other, and in Chad in 1976, even World War II launchers of the BM-13 type were still marketable.

The Czechoslovak RM-70 soon found an imitator outside of the Warsaw Pact: in 1973, Yugoslavia introduced as its own product a new multiple rocket launcher which shoots 32 rockets of the 128 mm calibre. The rockets weigh 64 kg and have a range of 18,000 m. The rocket launcher, which is mounted on a 12 t truck of the PAP-2220 BS type, has a recharging mechanism which appears to be quite similar to the CVA type. At any rate, Yugoslavia improved on its Czechoslovak model with a cover sheet for the launcher guiding system and recharging mechanism, which is folded at the rear end of the vehicle when the launcher is ready for deployment. (Figure 23)

#### Organization and Deployment of the Soviet Launcher Units

The standard unit of the rocket launcher troops of the Soviet ground forces and--modeled after them--the remaining Warsaw Pact armies, is the rocket launcher battalion. It is part of all armored and mechanized infantry divisions.

Beyond that, artillery divisions which are assigned to the fronts or, rather, to the "Reserve of the Top Command," still have a rocket launcher brigade at their disposal, which includes four battalions.

The rocket launcher battalion has a strength of approximately 270 men, and is equipped with 18 BM-21 multiple rocket launchers, which can deliver a salvo of 720 rockets to the target. It is divided into three firing batteries, which consist of a lead platoon and two launcher platoons. (Figure 24)

The rocket launcher battalion of the division is not part of the division artillery regiment, but is placed immediately under the division artillery leader. It constitutes the conventional chief weapon of the division against surface targets and is usually deployed as a unit. Deployment of the entire battery can occur as an exception, especially in defense.

The rocket launcher battalion completes and strengthens the fire of the ordinary artillery, especially when high fire density is to be achieved quickly against predominantly open, scattered enemy targets.

In the Attack, where--according to Soviet combat principles--3 phases of artillery deployment are distinguished, it is used especially in order to

--open artillery preliminary fire suddenly and with great psychological effect and to increase its density at the end with a final salvo;

--hold down the remaining enemy artillery in its fire positions during the "artillery support of the assault" and to destroy advancing reserves and counterattack forces;

--hold down remaining forces during the "artillery cover deep within the enemy defense lines," to break up counterattacks and to secure open flanks.

The rocket launcher battalion is deployed in defense in order to

--destroy enemy assembly positions before the attack;

--hinder the approach of attacking units, and

--cut off the enemy advance by fire,

--support counterattacks.

In special situations, such as the defense against counterattacks in the attack platoon, or while engaging an advancing enemy in the defense line, the deployment of multiple rocket launchers in direct aim is also possible.

As a rule, the rocket launcher battalion is kept in readiness before deployment in an assembly area which is up to 40 km behind the front lines. From here, the area of the firing position of the battalion with main-, evasive- and alternate firing positions for the batteries, as well as the battalion observation point, are determined and measured. When advancing to the firing

positions, the launchers are loaded and, if possible, they advance at night. If situation and terrain permit, they first move into assembly areas which are 2 to 3 km from the firing position before moving into the actual firing position, in order to protect against enemy reconnaissance and enemy fire. The firing position of the batteries, which, as a matter of principle, is changed after every salvo, is 125 to 250 m wide. The rows of launchers are 25 to 50 m apart. The entire firing area of the battalion is 1,250 to 2,500 m wide and 1,000 to 2,000 m deep, with its batteries 1,000 to 2,000 m apart.

When selecting the firing position areas, the distance to the planned target area must be taken into consideration here more than with the regular artillery. This is because of trajectory properties of rockets as well as the resulting strewing of salvos, for which the following characteristics hold true:

The rocket trajectory has, contingent upon the propulsion during the initial stage, an extended ascending branch. Since there is neither any choice between different loads nor is firing in the upper angle group possible, its "ballistic flexibility," i.e., the adaptability to the terrain forms, is similarly limited like that of a cannon trajectory. Short-range firing is therefore often made impossible by protective coverings. Since the thrust during the propulsion phase is further subject to certain variations, its results in certain characteristics for the strewing of a salvo:

#### Range Dispersion on Horizontal Target of a Salvo

- is a multiple of the area of lateral dispersion at short-range,
- decreases when the range increases and
- is lowest at maximum range

#### Lateral Range Dispersion of a Salvo

- increases with increasing range and
- reaches its maximum value, surpassing the range dispersion on horizontal target, at maximum range

Just barely under maximum range, lateral strewing equals horizontal strewing. This results in a target broaching close to maximum range, a square of plotted hits with optimal fire density.

When firing over a shorter range, a nearly equal blanketing of the target area can be achieved only by fanning out the battery salvo by setting different angles of deflection for the individual launchers. Therefore, firing positions are basically chosen in such a way that the most important target areas lie in the last third of the range. The possibility of using ammunition of differing range gives increased flexibility to the BM-21, which, however, requires time-consuming reloading when there are unexpected situation changes.

As a rule, the firing position of the rocket launcher battalion lies 5 to 10 km behind the front line of the attack, and 7 to 12 km behind the front line of defense when in a defensive position.

#### Summary and Outlook

The Soviet Army has maintained its rocket launcher troops, which have proved themselves in World War II as an effective component of the conventional artillery, and has expanded them more than any other army of the world. It has continuously kept its equipment up to modern standards through the development of new types of launchers, and, with the BM-21 launchers, today has at its disposal an efficient weapons system which surpasses all previous types with its combination of range, effectiveness and flexibility.

The number of the multiple rocket launchers carried in the rocket launcher battalions of the battle division, as well as in the rocket launcher brigades of the artillery division, amounts to around 4,000, and thus surpasses the number of launchers which were present at the end of World War II by about one-fourth, with approximately three times the fire power. In the future, it can be expected that the Soviet Army will follow the Czechoslovak example and will introduce a launcher equipped with a reloading mechanism.

Moreover, there are indications for the development of a new heavy multiple rocket launcher with a wide range, which is presumably supposed to launch large-calibre rockets filled with fragmentation mines.

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